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Feeding milk

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FEEDING MILK.

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The value of milk for young animals is well known to Iowa farmers; its value as part of a feeding ration for all animals has not been so well determined. Dairying is increasing so fast in the state, that this Station thought it wise to ascertain the value of milk, as a ration, or part of a ration, for cows giving milk. During the interval between college terms in 1891, we had surplus full milk, and skimmed milk, that we resolved to feed to cows on pasture to ascertain its effect on milk-giving.

We took two Holstein cows to experiment with, Nos. 155 and 151. The former had been giving milk for a month, the latter was fresh.

They were grazing on a good blue grass pasture and had no grain ration of any kind during the time they were fed milk. We had some difficulty in inducing them to drink milk. A little put in a new dish with bran, and increased gradually, brought them in a few days to drink 20 pounds each morning and night, which was continued from June 21, 1891, to July 16. The milk was then discontinued for nine days, when each cow was fed 20 pounds of skim-milk morning and evening for ten days, from July 26th to August 4th.

The milk given by each cow was weighed at each milking, sampled, and taken to the chemist who analyzed in periods of 4, 5 and 6 days, as the tables show.

COW 155.

This cow gave 180 pounds of milk for the five days before the experiment began, from June 16th to 20th, an average of 36 pounds a day, with no feed of any kind except blue grass pasture. The following table shows her performance during the experiment:

COW 155.

ON PASTURE AND FULL MILK.

DATES.	Daily ration, full milk, pounds.	Milk, pounds, yield.	Daily average milk, pounds.	Fat, per cent composite.	Solids, per cent composite.	Fat, pounds, composite.	Solids, pounds, composite
June 21 to 25	40	192	38.4	3.00	12.02	5.76	23.08
" 26 to 30	40	185	37.	2.95	11.93	5.46	22.07
July 1 to 6	40	241	40.1	2.95	11.98	7.11	28.87
" 7 to 11	40	212	42.4	3.00	12.10	6.36	25.65
" 12 to 16	40	202	40.4	3.00	12.28	6.06	24.81

ON PASTURE.

July 17 to 21	176	35.2	2.85	11.94	5.02	21.01
" 22 to 25	136	34.	2.65	11.79	3.60	16.03

ON PASTURE AND SKIM-MILK.

	Skim-Milk.						
July 26 to 30	40	165	33.	2.75	11.91	4.54	19.65
" 31 to Aug. 4	40	159	31.8	2.80	11.66	4.45	18.52
Aug. 5 to 8		132	33.	3.00	11.97	3.96	15.80

ON PASTURE.

Aug. 9 to 13	149	29.8	2.80	11.77	41.17	17.54
" 14 to 18	140	28.	2.75	11 87	3.83	16.62
" 19 to 24	156	26.	2.70	11.91	4.21	18.57
" 25 to 29	134	26.8	2.60	.....	3.48	.....

It will be seen that her milk is increased to 192 pounds from June 21st to 25th, or 38.4 pounds a day, showing that milk has an immediate effect. The fat is quite uniform in per cent during the period of full milk feeding. The last two test periods of five days each, ending July 16, show the full effect of the milk feed, resulting in 42.4 and 40.4 pounds of milk with 6.36 and 6.06 pounds of fat, and 25.65, and 24.81 pounds of total solids. The full milk was then discontinued, the cows getting nothing but pasture from July 17th to 25th.

It will be seen that during these nine days there was a short falling off in milk fat and solids, the milk shrunk to 34 pounds a day, the fat to 2.65 per cent, the pounds of fat and solids decreasing correspondingly.

The cow had then ten days of skim milk from July 26th to August 4th. The milk did not increase during the ten days, but the four days following from August 5th to 8th showed an increase of milk and an increase of fat per cent from 2.80 to 3.00. The solids per cent increased to 11.97, a point not reached since the full milk had been fed. The cow on pasture from August 5th to 29th gradually reduced her yield in all respects.

This cow weighed 1448 at the beginning of the experiment, and 1400 at its close, She lost 68 pounds while drinking the full milk, and gained 20 pounds while drinking the skim milk.

COW 151.

The following table shows the effect of feeding milk to this cow:

DATES.	Daily ration, milk, pounds.	Milk, pounds, yield.	Fat, per cent composite.	Milk, daily average.	Solids, per cent composite.	Fat, pounds composite.	Solids, pounds composite.
ON PASTURE AND FULL MILK.							
June 21 to 25	40	163	3.27	32.6	11.85	5.33	19.32
" 26 to 30	40	180	3.05	36.	11.65	5.49	20.97
July 1 to 6	40	198	3.15	33.	11.63	6.24	23.03
" 7 to 11	40	157	3.20	31 4	11.75	5.02	18.43
" 12 to 16	40	156	3.05	31.2	11.65	4.76	18.17
ON PASTURE.							
July 17 to 21		145	2.95	29.	11.39	4.28	16.50
" 22 to 25		106	2.95	26.5	11.35	3.13	12.03
ON PASTURE AND SKIM MILK.							
July 26 to 30	40	135	2.70	27.	11.04	3.65	14.91
" 31 to Aug. 4	40	139	2.85	27.8	11.24	3.96	15.62
Aug. 5 to 8	40	112	3.10	28.	11.35	3.47	12.71
ON PASTURE.							
Aug. 9 to 13		133	3.05	26.6	11.52	4.06	15.32
" 14 to 18		118	3.00	23.6	11.39	3.54	13.44
" 19 to 24		133	2.60	22.1	11.24	3.45	14.94
" 25 to 29		112	3.00	22.4	.....	3.36	.....

During the hot weather from June 21st to July 16th, the full milk substantially kept this cow up to her fresh condition, as pastures were drying up, and shrinkage was general with all cows that had nothing but pasturage.

As soon as the milk was withheld shrinkage began in quantity of milk, per cents of fat and solids. In the nine intervening days between July 16th and 25th her milk had shrunk to 26.5 pounds a day, her fat per cent to 2.95 and solids to 11.35. The ten days on skim milk July 26th to August 4th and the four days following, August 5th to 8th show an increase in milk to 28 pounds a day, an increase in fat per cent to 3.10 with the solids that had gone down to 11.04 back to 11.35. On pasture after the skim milk was withheld decrease in yield was continuous.

This cow lost 80 pounds in weight from June 21st to August 29th, and 70 pounds of that was lost while she was drinking the full milk, from June 21st to July 16th. Both cows were weighed at the beginning of the experiment on three separate days, then three times at the end of the full milk period; again on three separate days at the beginning of the skim milk period, and as often at its close. Comparing the weights of the two cows we find that, both lost while drinking full milk and one (155) gained in weight on the skim milk.

Professor Stewart's nutritive ratio tables place full cow's milk at 1 to 4.4 and skimmed milk at 1 to 1.9. It is rarely the case that farmers can profitably feed full milk, but there are times when it may be done. We find indications that it is grateful to the animal, has immediate effect, increases the flow of milk, and increases fats and solids.